

## **REMARKS**

Claims 1-4 and 9-15 are present in the instant application. At the outset, Applicant gratefully acknowledges the indication of allowable subject matter in claims 3-4. Claims 3 and 4 were indicated as containing allowable subject matter, but objected to as depending from a rejected claim. As amended above, claim 3 is amended into independent form including subject matter recited in underlying independent claim 1 and intervening claim 2. Claim 4 remains dependent from claim 3. Favorable reconsideration and withdrawal of the objection is kindly requested.

New claims 9-15 are added by the above amendment. These claims read on the elected invention, and are patentable over the prior art of record. The claims are fully supported in the original specification as filed, and no new matter has been added.

Claims 5-8 have been withdrawn by the Examiner pursuant to the Restriction Requirement under 35 U.S.C. § 121, and Applicant's election. As amended above, claims 5-8 are cancelled without disclaimer or prejudice to their subsequent re-introduction in this or a continuing divisional application.

The Examiner has suggested that the application admits of illustration to facilitate understanding of the invention, and has required a drawing. Applicant respectfully disagrees. Independent claims 1 and 9 recite, respectively, a method of recognizing objects under various lighting conditions, and a method of image recognition of an input image. Applicant is unclear what illustration the Examiner believes might facilitate understanding of the claimed invention beyond the specification as originally filed, and remains of the opinion that no drawing is

suggested or necessary. Favorable reconsideration and withdrawal of the requirement is kindly requested.

In the Office Action, claim 1 is rejected under 35 U.S.C. § 102(a) as allegedly anticipated by NEC Technical Report titled Lambertian Reflectance and Linear Subspaces, by Basri, et al. (hereinafter, "Basri"). Although not included in the statement of rejection, the Office Action addresses claim 2 in reference to Basri. Applicant presumes that in a subsequent non-final Office Action, the Examiner may be inclined to reject claim 2 in view of Basri as well.

Applicant respectfully traverses the rejection, for at least the following reasons. Claim 1 recites a method of recognizing objects under various lighting conditions comprising, *inter alia*, deriving a reflectance function that describes an approximation of the set of all possible rendered images that each three dimensional model can produce under all possible lighting conditions, said rendered images including both diffusely and specularly reflected light. The Office Action avers that this feature is taught in Basri at page 4, section 2, first paragraph. Specifically, the Office Action states that "illumination cones" there recited would have inherently included diffusely and broadened-specularly reflected light. Applicant respectfully disagrees.

It has been held by the courts that to support a *prima facie* case of anticipation by inherency, the limitation in question must "necessarily" be present in the prior art reference. *In re Robertson*, 169 F.3d 743, 49 USPQ2d 1949 (Fed. Cir. 1999). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original)

Turning to the portion of Basri relied upon in the Office Action, it specifically defines the "illumination cone" as the set of images of a Lambertian object obtained with arbitrary light.


Contrary to the assertion in the Office Action, the assumption of a Lambertian object does not inherently include, but rather expressly excludes, consideration of specularly reflected light. A Lambertian object relies only upon the assumption of incident light scattering equally in the hemisphere above the point of incidence, without regard to any specular component of reflection (Basri, pp. 4-5, Eq. 2 as statement of Lambert's Law, independent of point of observation; convolution kernel rotationally symmetric about surface normal).

Therefore, Applicant respectfully submits that consideration of specularly reflected light is not inherent to the illumination cone of a Lambertian object disclosed in Basri, and that claim 1 is patentably distinguished over Basri. The rejection having been obviated, Applicant kindly requests favorable reconsideration and withdrawal thereof. Claim 2 depends from claim 1, and while separately patentable, is submitted as patentable for at least the same reasons as underlying independent claim 1.

In light of the foregoing, Applicant respectfully submits that claims 1-4 and 9-15 each recite patentable subject matter, and kindly solicits an early indication of allowability of all claims. If the Examiner has any reservation in allowing the claims, and believes that a telephone

interview would advance prosecution, he is kindly requested to telephone the undersigned at an earliest convenience.

Respectfully submitted,



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